

Abstract Submitted  
for the DPP13 Meeting of  
The American Physical Society

**Optimizing Pedestal Performance with the EPED Model<sup>1</sup>** P.B. SNYDER, E.A. BELLI, R.J. GROEBNER, T.H. OSBORNE, General Atomics, J.W. HUGHES, MIT, H.R. WILSON, U. of York — Fusion energy performance of tokamak plasmas is expected to scale strongly with the pressure at the top of the edge transport barrier (or “pedestal height”). The EPED model predicts pedestal height by combining calculated peeling-ballooning (PB) and kinetic ballooning mode (KBM) constraints. EPED has been successfully compared to hundreds of cases on 5 tokamaks finding within  $\sim 20\%$  agreement with observed pedestal height. We develop and test methods for optimizing the pedestal height on existing devices as well as ITER, including use of impurities to vary pedestal collisionality, and “Super H-Mode” operation in strongly shaped plasmas. Ongoing development of the EPED model, including coupling to bootstrap current calculations with the NEO code, and direct electromagnetic gyrokinetic calculations, is also discussed, as is application of the model to ELM suppressed regimes.

<sup>1</sup>Work supported in part by US the Department of Energy under DE-FG02-95ER54309, DE-FC02-06ER54873, DE-FG02-92ER54141

Phil Snyder  
General Atomics

Date submitted: 12 Jul 2013

Electronic form version 1.4